

Information Technology – Geographic Information

Framework Data Content Standard

Part 1: Cadastral

CAUTION NOTICE

This standard document may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. Users of American National Standards may receive current information on all standards by contacting the American National Standards institute (ANSI).

Secretariat:
INFORMATION TECHNOLOGY INDUSTRY COUNCIL
Approved:
YEAR-MM
American National Standards Institute

American National Standard

Approval of an American National Standard requires verification by the American National Standards Institute (ANSI) that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgment of the ANSI Board of Standards review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he or she has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Request for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

Published by:

Information Technology Industry Council

1250 Eye Street NW, Suite 200

Washington, DC 20005

Voice: 202.737.8888

FAX: 202.638.4922

WEB: www.itic.org

Copyright © by Information Technology Industry Council

All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the written permission of the publisher.

Printed in the United States of America.

116 Contents

117	Introduction.....	iv
118	1 Scope, purpose, and application	1
119	2 Normative references.....	1
120	3 Maintenance authority	1
121	3.1 Level of responsibility.....	1
122	3.2 Contact information	2
123	4 Terms and definitions	2
124	5 Requirements.....	3
125	5.1 Application schema.....	3
126	5.1.1 Parcel class.....	3
127	5.1.2 OwnerType class.....	3
128	5.1.3 ParcelSource class.....	3
129	5.1.4 ParcelGeometry class.....	3
130	5.1.5 ParcelCollection class	3
131	5.2 Data dictionary.....	5
132	5.3 Code list.....	7
133	Annex A (normative) Normative references	8
134	Annex B (informative) Sample diagram	9
135	Annex C (informative) Additional resources	10
136	Figures	
137	Figure 1 – Cadastral theme UML model	4
138	Figure B.1 – Four parcel polygons with centroids and ParcelIDs.....	9
139	Tables	
140	Table 1 – Cadastral theme data dictionary	5
141	Table 2 – CodeList for OwnerType	7
142	Table B.1 – ParcelIDs related to a ParcelSource and OwnerType.....	9
143		

Foreword

Geographic information, also known as geospatial information, both underlies and is the subject of much of the political, economic, environmental, and security activities of the United States. In recognition of this, the United States Office of Management and Budget issued Circular A-16 (revised 2002), which established the Federal Geographic Data Committee (FGDC) as a coordinating organization.

Work on this standard started under the Geospatial One-Stop e-Government initiative. The standard was developed with the support of the member agencies and organizations of the FGDC and aids in fulfilling a primary objective of the National Spatial Data Infrastructure (NSDI), that is, creation of common geographic base data for seven critical data themes. The seven core data themes are considered framework data of critical importance to the spatial data infrastructure.

The increasing need to coordinate collection of new data, identify applicability of existing data, and exchange data at the national level led to the submission of this standard to the ANSI process to become an American National Standard. The national standard contained in this document and its parts was sponsored by Technical Committee L1, Geographic Information Systems, of the InterNational Committee for Information Technology Standards (INCITS), an ANSI-accredited standards development organization.

As the Geographic Information Framework Data Content Standard was developed using public funds, the U.S. Government will be free to publish and distribute its contents to the public, as provided through the Freedom of Information Act (FOIA), Part 5 United States Code, Section 552, as amended by Public Law No. 104-231, "Electronic Freedom of Information Act Amendments of 1996".

Introduction

The Geographic Information Framework Data Content Standard, Part 5: Cadastral establishes common data requirements for the exchange of National Spatial Data Infrastructure (NSDI) framework data for the Cadastral theme. The purpose of the part is to facilitate the exchange of cadastral (real property) data.

This part provides a data content and high level Universal Modeling Language (UML) description for cadastral data.

Cadastral data are produced and maintained by thousands of organizations across the country. This part provides a profile of that information to support the facilitation of exchange which has been defined as the information necessary for the navigation to and discovery of cadastral information from the many providers.

Cadastral data are defined as the geographic extent of the past, current, and future rights and interests in real property including the spatial information necessary to describe that geographic extent. Rights and interests are the benefits or enjoyment in real property that can be conveyed, transferred, or otherwise allocated to another for economic remuneration. Rights and interests are recorded in land record documents. The spatial information necessary to describe rights and interests includes surveys and legal description frameworks such as the Public Land Survey System, as well as parcel-by-parcel surveys and descriptions.

The Cadastral Data Content Standard (FGDC-STD-003), upon which this part is based, is intended to support the automation and integration of publicly available land records information. The Cadastral Data Content Standard is intended to be useable by all levels of government and the private sector. That standard contains the standardization of the definition of entities and objects related to cadastral information including survey measurements, transactions related to interests in land, general property descriptions, and boundary and corner evidence data. Any or all of these applications are intended to be supported by the standard.

The intended geographic scope of the Cadastral Data Content Standard and this profile of that standard is all fifty States of the United States including all onshore cadastral as well as marine cadastral information. Applicability of this part of the Framework Data Content Standard in other geographic areas and business processes, such as the Insular Areas of the United States has not been determined.

Framework Data Content Standard – Cadastral

1 Scope, purpose, and application

The Geographic Information Framework Data Content Standard, Part 5: Cadastral part provides the information necessary to identify the existence of parcel-level cadastral information and the source of that information. The geospatial metadata provided in conformance to this part will include the contact, distribution, and access requirements for the cadastral data. Additional information on the content of the full parcel or cadastral data sets, its accuracy, and its spatial projection, is also provided with the metadata.

This part of the standard is not intended to support homeland security, citizen query and access, real estate records, or other application-based information. The Cadastral part includes only the minimum data necessary to facilitate locating the existence of parcel-level information and identifying the source. These data, along with the appropriate metadata, will provide the information describing how and where to get the data needed to support applications.

The purpose of this standard part is to facilitate the exchange of cadastral (real property) data. The Cadastral part is one of seven themes presently included in the National Spatial Data Infrastructure (NSDI).

Data complying with the FGDC's Cadastral Data Content Standard (FGDC-STD-003) would be necessary to locate a parcel by site address and to display the assessed value of property. The Cadastral part is a profile of the FGDC Cadastral Data Content and all of the elements in this profile are included in the full content standard. The Cadastral part profile supports the discovery of and the navigation to cadastral information. Associated metadata will identify the providers of additional cadastral information. The FGDC Subcommittee for Cadastral Data publishes and maintains other cadastral profiles of the Cadastral Data Content Standard based on identified business processes and application needs. These profiles can be found at <http://www.nationalcad.org>

Cadastral data works in harmony with other data sets. For example, to determine whether there is parcel or cadastral information available in a specified city, users will need to navigate to that geography and then verify that the minimum core parcel information and its metadata have been made available for that area.

The Cadastral part can be implemented using a variety of software packages and is designed to accommodate data encoded without geometry as well as to support the exchange of data encoded in a variety of GIS formats.

2 Normative references

Annex A lists normative references to standards that are applicable to this part of the Framework Data Content Standard. Annex A of the Base Document (Part 0) lists normative references applicable to two or more parts of the standard. Annex D of the Base Document lists informative references applicable to all of the parts.

3 Maintenance authority

3.1 Level of responsibility

The FGDC is the responsible organization for coordinating work on all parts of the Geographic Information Framework Data Content Standard. The Subcommittee for Cadastral Data, working with the FGDC, is directly responsible for development and maintenance of the Geographic Information Framework Data Content Standard, Part 1: Cadastral. The United States Department of the Interior - Bureau of Land Management - Geographic Sciences Team currently leads the Federal Geographic Data Committee, Subcommittee on Cadastral Data.

Information Technology – Geographic Information Framework Data Content Standard

Part 1: Cadastral

The FGDC shall be the sole organization responsible for direct coordination with the InterNational Committee for Information Technology Standards (INCITS) concerning any maintenance or any other requirements mandated by INCITS or ANSI affecting the Cadastral part.

3.2 Contact information

Address questions concerning this part of the standard to:

Federal Geographic Data Committee Secretariat
c/o U.S. Geological Survey
590 National Center
Reston, Virginia 20192 USA

Telephone: (703) 648-5514
Facsimile: (703) 648-5755
Internet (electronic mail): gdc@fgdc.gov
WWW Home Page: <http://fgdc.gov>

Or

Bob Ader, BLM Cadastral Survey
MS CO955
2850 Youngfield Street
Lakewood, Colorado 80215

Telephone: (303) 239-3817
Facsimile: (303) 239-3815
Internet (electronic mail): bob_ader@blm.gov
World Wide Web: <http://www.nationalcad.org>

4 Terms and definitions

Definitions applicable to the Cadastral part are listed below. More general terms can be found in the Base Document (Part 0).

4.1

owner type

classification of the ownership for the primary surface interest

4.2

parcel identifier

primary permanent identifier for the parcel defined by the jurisdiction referenced in the **source identifier**

4.3

parcel map

collection of **parcel polygons**, usually from a single source

4.4

parcel point

point feature within the **parcel polygon** that can be used to attach related information

NOTE The parcel point provides a general reference for locating a parcel. Parcel points can be provided when parcel polygons are not available or they can be provided as a supplementary geographic representation.

4.5

parcel polygon

286 geographic extent of the parcel, as depicted using an area feature

287 NOTE The parcel polygon is a closed polygon.

288 **4.6** 289 **primary**

290 Boolean (True or False) that indicates whether the **parcel identifier** and the source for that
291 **parcel identifier** are the primary identifier and primary source

292 NOTE If the primary is True then the parcel identifier and the source identifier are primary. If the
293 primary is False then the parcelId and the source of that parcelId are secondary or alternative. There can be
294 multiple alternative parcel identifiers and associate source identifiers but there can only be one primary
295 parcelId and associate source for any parcel feature.

296 **4.7** 297 **source identifier**

298 permanent identifier for the agency, organization, or jurisdiction that assigns and maintains the
299 **parcel identifier**; that is to say, namespace

300 NOTE The source should identify itself using the appropriate jurisdiction Federal Information
301 Processing System (FIPS) code where possible.

302 **5 Requirements**

303 **5.1 Application schema**

304 The Cadastral part extends the basic Framework Data Content Standard UML model by adding
305 five part-specific classes, as shown in Figure 1. The primary class for the Cadastral part is the
306 Parcel. These classes define the Cadastral part referenced in the Base Document. The five
307 Cadastral part classes are described below.

308 **5.1.1 Parcel class**

309 The Parcel class is the main class to convey cadastral information. It is stereotyped as a
310 <<Feature>> and as such has identity and geometry properties.

311 **5.1.2 OwnerType class**

312 The OwnerType class is a code list of valid values that classify the owner type. This is not the
313 ownership type, but rather is the classification of the owner.

314 **5.1.3 ParcelSource class**

315 The ParcelSource class groups elements regarding each parcel and its source information.

316 **5.1.4 ParcelGeometry class**

317 This class represents a choice between a centroid or polygon representation of the parcel.

318 **5.1.5 ParcelCollection class**

319 These features were introduced for conformance with the other Geographic Information
320 Framework Data Content Standard parts and as such are not a part of the Cadastral part. These
321 represent a super type of data collection with metadata. They are a set of features that occur
322 within the context of a container object known as a "feature collection". This is a convention used
323 to delimit a group of features of a given type and common schema.

324

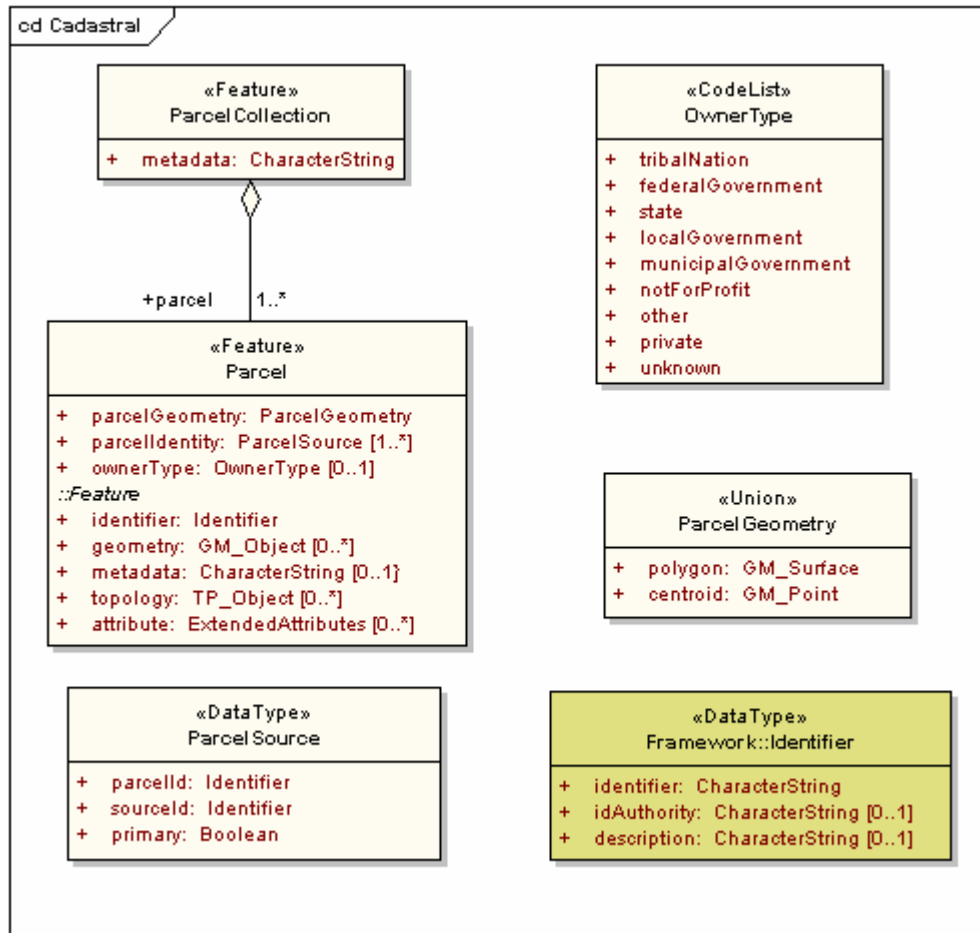


Figure 1 – Cadastral theme UML model

The class shown in green or gray is an inherited class and is shown for convenience. The tan or light gray classes are the Cadastral theme classes and are described below.

5.2 Data dictionary

Table 1 – Cadastral theme data dictionary

Line	Name/Role Name	Definition	Obligation/ Condition	Maximum Occurrence	Data Type	Domain
1	ParcelCollection				<<Feature>>	Lines 2-3
2	metadata	Information that describes this information transfer represented as a URL or as a block of text	M	1	CharacterString	Unrestricted
3	Role name: parcel	Links ParcelCollection to the Parcel that belongs to the ParcelCollection	M	*	Parcel	Unrestricted
4	Parcel				<<Feature>>	Lines 5-12
5	parcelIdentity	Parcel identifier	M	*	<<DataType>> ParcelSource	CharacterString and Boolean
6	parcelGeometry	Centroid or polygon representation of parcel location	M	1	<<Union>> ParcelGeometry	GM_Polygon or GM_Point
7	ownerType	Classification of the ownership for the primary surface interest	O	1	<<CodeList>> OwnerType	Restricted to the values in the code list OwnerType
8	Framework::Feature::identifier	Feature identifier for the Parcel	M	1	<<DataType>> Framework::Identifier	Unrestricted
9	Framework::Feature::geometry	Shape and geolocation of a feature	O	*	<<Type>> GM_Object	Defined in ISO 19107
10	Framework::Feature::metadata	Structured or unstructured metadata as defined by the community of practice	O	1	CharacterString	May be text or structured metadata fragment
11	Framework::Feature::topology	Connectivity of the participating elements	O	*	<<Interface>> TP_Object	Defined in ISO 19107
12	Framework::Feature::attribute	Producer-defined attribute for inclusion in transfer	O	*	<<DataType>> Framework::	Unrestricted

Information Technology – Geographic Information Framework Data Content Standard
Part 1: Cadastral

Line	Name/Role Name	Definition	Obligation/ Condition	Maximum Occurrence	Data Type	Domain
					ExtendedAttributes	
13	ParcelSource	Group of parcel source information that is maintained together			<<DataType>>	Lines 14-16
14	parcelId	A unique identifier for the parcel	M	1	<<DataType>> Framework::Identifier	Framework::Identifier
15	sourceId	The linkage to the agency or organization that assigned the parceled	M	1	<<DataType>> Framework:Identifier	Framework::Identifier
16	Primary	Designation that the current record describes the primary parcel	M	1	Boolean	True or False
17	ParcelGeometry	Choice of centroid or polygon representation of the parcel			<<Union>>	Lines 18-19
18	polygon		M	1	<<Type>> GM_Surface	Defined in ISO 19107
19	centroid		M	1	<<Type>> GM_Point	Defined in ISO 19107

5.3 Code list

OwnerType is a non-exhaustive CodeList of the parcel owner's administrative designation.

Table 2 – CodeList for OwnerType

Name	Definition
tribalNation	An American Indian Tribe or nation
federalGovernment	The United States federal government and its agencies and departments
state	A State government or the city of Washington DC
localGovernment	A county, parish, or borough government
municipalGovernment	A municipality of government
notForProfit	A not for profit organization which is also exempt from real estate taxes
other	Any other organization
private	A private firm, for profit organization, or an individual or group of individuals
unknown	The type of ownership is not known

339
340
341

Annex A
(normative)
Normative references

342 This annex lists normative standards that support only this part of the Framework Data Content
343 Standard. Annex A of the Base Document (Part 0) lists normative references applicable to two or
344 more parts of the standard.

345 ANSI NCITS 353:2001, Spatial data standard for facilities, infrastructure, and environment

346 FGDC-STD-003-2003, Cadastral data content standard, Version 1.3,
347 http://www.fgdc.gov/standards/status/sub3_5.html, accessed January 2006

Annex B
(informative)
Sample diagram

The diagram below shows four parcel polygons each with a centroid and a related table that contains attributes for those features.

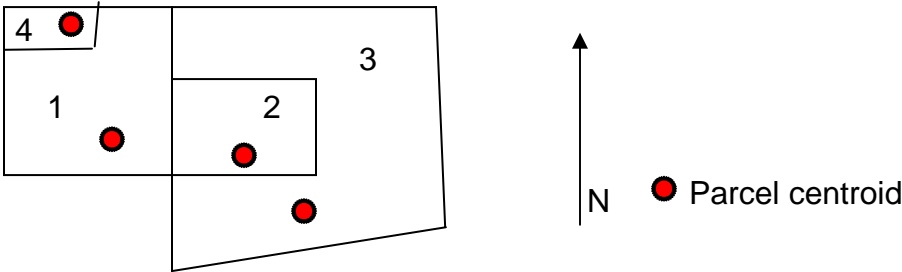


Figure B.1 – Four parcel polygons with centroids and ParcelIDs

The table below contains attributes for the features in the figure above.

Table B.1 – ParcelIDs related to a ParcelSource and OwnerType

ParcelID	ParcelSource	OwnerType
1	39-063	TribalNation
2	39-063	LocalGovernment
3	39-063	Private
4	39-063	Private

Annex C
(informative)
Additional resources

370 The FGDC Subcommittee for Cadastral Data in partnership with Federal agencies, Tribes, State
371 and local governments and agencies, and the private sector maintains reference information and
372 educational materials in support of the profile described in this document as well as profiles
373 serving many other business processes and applications. If an organization needs additional
374 attributes or has implementation questions there are profiles for various business cases on the
375 nationalcad site. This information is freely available and can be found at
376 <http://www.nationalcad.org>. Other information related to implementation, jurisdictions serving
377 cadastral information, and ongoing projects can be found at this site.